WATERSHED RESTORATION PROGRAM

MOF–MELP INTEGRATED HEADQUARTER INVESTMENT PLAN
FISCAL 2000/01

Final Plan - September 30, 1999

Introduction
The Headquarters Investment Plan (HIP) for the Watershed Restoration Program (WRP) is designed to support the three goals of the Program for 2000 to 2005 (1999 RMP Appendix II):

1. *restore and protect fish habitat and water quality in high priority watersheds adversely affected by past forest harvesting practices that, without intervention., would require decades to recover naturally;*

2. *provide better knowledge, information, and tools to strengthen sustainable management of watersheds; and*

3. *provide community-based employment, training and stewardship opportunities.*

The six key strategies for 2000-2005, as given in the 1999 RMP Appendix II, are:
- focus first on water quality and fish habitat;
- identification of key watersheds to guide expenditures;
- maintain an integrated whole watershed approach;
- encourage leverage or cost sharing with other initiatives to maximize investment and coordination;
- make new knowledge and learning on watershed processes and management accessible to all;
- increase accountability and improve monitoring and evaluating of cost-effectiveness.

On an annual basis, the HIP is designed to provide important technical and applied scientific support towards effective achievement of these goals. Watershed restoration is a relatively new and needed initiative in B.C., thus requiring technical and training support to be effective and efficient. Further, the effectiveness of the new forest practices regulations (the Code) and the health of forested watersheds are co-dependent upon both the effectiveness of the Code (for new forest harvesting) and the Watershed Restoration Program (for past logging impacts).

In the Watershed Restoration Program, the Ministry of Forests (MOF) has responsibility for hillslope rehabilitation and the Ministry of Environment, Lands and Parks (MELP) for stream restoration, with overlapping responsibilities for restoration of riparian areas. It is also recognized by FRBC and the Ministries that watershed components are physically and biologically interconnected, thus requiring an integrated watershed approach to maximize the benefits of the Program and to ensure delivery of goals.

This WRP HIP budget consists of MOF and MELP sets of specific projects focused on technical support, training and education, and effectiveness monitoring. Closer integration of HIP budgets is being achieved in recognition of identical Program goals for both ministries. Projects are summarized below as special projects, effectiveness monitoring projects, and tools for advancing technical capacity / training / communications. Stand-alone ministry HIP Projects, needed to support respective hillslope components or aquatic components, are also summarized but show only the relevant Ministry support.

I. Special Projects

1 When road deactivation is planned, the tenure holder must be contacted to ascertain if the road is required. Funds are required for MEM to hire consultants to contact and consult with mining tenure holders prior to road deactivation. This project was $100K in 1998, $50K in 1999 and is now being reduced to $30K, because most assessments should have been completed.

- MOF - MEM Mining Tenure holders Consultation $30K

2 A MOF data collection project was integrated with MELP in 1999/00 to capture summary output results in terms of accomplishments by FRBC region. This WRP project registry will need to be verified and continue to summarize output results from 1999/00 onward:

- MOF WRP Project Registry Data Base Verification by Region/District
- MELP WRP Outputs/Monitoring Data Base $ 5K
- FRBC To keep the data base up to date $15K

3 A Situation Analysis of Riparian Restoration was started in 1999 and is now in progress. It is required to complete this situation analysis and follow up the results with field testing of riparian assessments and prescriptions. This analysis needs to be re-examined and then followed up with testing of riparian methods, particularly to examine of the merits and cost-effectiveness of single versus multiple entry of the reserve zone to attain riparian objectives. The project will be jointly managed.

- MOF Riparian Restoration follow up to Situation Analysis $40K
- MELP Riparian Assessment and Prescriptions Procedures testing $15K

4 Administration funding to manage technical co-ordination of the Watershed Restoration Program

- MOF WRP Planning, coordination and administration: $85K
- MELP Planning, coordination and administration (included in project/overhead budgets)

5 After five years (1995-1999) of aquatic restoration is now largely delivered by licensees and other MYAs, and therefore there is a need to undertake a audit of the quality and performance of stream components to ensure positive activities and outputs are continued and poor quality practices are modified or discontinued. This audit should be conducted using an integrated watershed approach to detect any works that may be at risk from uncorrected hillslope hazards.

- MELP Field Project Performance Audit: $20K

6 Once annual applications of slow-release fertilizer briquettes to both instream and off-channel sections are often needed to restore trophic conditions and thus to speed restoration while fish stocks recover. This is because habitat impacts depress salmon abundances which cause significant marine nutrient and carbon limitations of our infertile waters. This cost-efficient aquatic technique also has direct application to riparian and bioengineering treatments; marine nutrient influx stimulates riparian growth. Re-development of this technique has recently been accomplished and the product lab-tested for release rates in 1999/00. This project had been funded since 1996 at this level, but the failure of the previous supplier in 1998 to market their product required continued funding. After re-starting in 9199/00, the replacement product will be available in 2000/01 for distribution and field testing in stream channels, as well as for riparian reserve and/or bioengineering treatments. This largely aquatic project will be managed by MELP with input from MOF on vegetative treatments:

- MELP Field Testing of Slow-Release Fertilizers $30K

7 WRP Program Refinement e.g. performance measures, reporting, unit costs, completion of the provincial planning and priority setting framework.

FRBC $90K

II Effectiveness Monitoring

The first four projects on Effectiveness Monitoring are largely dependent on the previous one being completed as a prerequisite; hence, these four projects may not all be completed in the 2000/01 fiscal year.

1 Technical specifications, as a procedure circular, are required in support of the Effectiveness Monitoring Framework. These will be integrated by MELP topping up a MOF larger hill-slopes project by MELP providing staff time from a technical advisory project budget to provide a joint procedural guide, published under a single cover in the joint WRP publication series.

- MOF Effectiveness Monitoring Technical Specifications Development $40K
- MELP B C Technical Advisory Team (staff time)

2 Field demonstration and/or test sites for intensive effectiveness monitoring projects are needed. After five years of Program activities, there is now a critical need to undertake an integrated and coordinated set of intensive level monitoring. Pilot projects are needed to develop procedures and facilitate integration of monitoring of hillslope and stream components at a watershed level. For example, Big Silver-Hornet Creek has been identified by others agencies (DFO) and MELP as a suitable site in which the licensees (Interfor) are interested in engaging in monitoring, the work is just starting, and the watershed was ranked as high priority with a high chance of success in the RMP. The site is under discussion as well with MOF-VFR (Denis Collins) and Brendan Holden for MOF input or involvement at an early stage, perhaps as a suitable coastal site for testing of hillslope monitoring protocols.

- MOF Effectiveness Monitoring: Field Test of Technical Specifications $40K
- MELP Integrated Watershed Monitoring $30.3K

3 A data summary tool is needed for providing summaries of effectiveness monitoring results as adaptive management feedback to WRP practitioners. Both Agencies also utilize the WRP Bulletin as a vehicle for this purpose, but some additional work is needed on the feedback loop or other mechanisms to get the results or effectiveness monitoring back to the restoration managers.

- MOF Effectiveness Monitoring Adaptive Management $25K
- MELP Watershed Restoration Publications $30K

4 Effectiveness Monitoring framework is completed and technical specifications are to be developed. Once the Technical Specification documents are developed, field tested and fine tuned, they will be reviewed to determine the training needs. MELP will integrate via training development/materials course. See training section.

- MOF Effectiveness Monitoring Training Course $25K
- MELP as above (covered off in HD staff time plus training materials project)

5 Intensive Ongoing Effectiveness Monitoring Projects There is only a limited amount of intensive-level effectiveness monitoring in progress in support of the Watershed Restoration program, resulting in external criticisms. Much is not of rigorous intensity because it is funded either from operational

projects or in a few instances, externally. Thus, it is essential to complete those more rigorous ongoing projects.

5a Instream Structure Optimization. This project supports the only intensive-level effectiveness monitoring of watershed-level restoration that focuses on anadromous fish habitat, and their sea-run fish outputs, resulting from restoration. The project showed preliminary evidence of strong rebound in fish stocks in 1999 even though restoration was only 60 % completed (Keogh River and adjoining Walkwaus reference watershed), and its continuity is vital to the Program.

- MELP Instream Structure Optimization $60K

5b Durability of Instream Structures. This project is a continuation of support for establishing applied engineering criteria and predictive methods for ensuring stability of instream fish habitat rehabilitation structures (complete), provision of instream performance workshop proceedings (nearing completion -1999) on stability and functionality, and extend application to morphometry and streambank stability (in progress). The next stage is to develop similar methods and criteria for channel stabilization of steeper logged channels, a primary source of transported sediments as a result of historical practices of logging across streambanks of alluvial channels. It is recommended that the project focus on development of a "risk rating tool" for stabilization prescriptions for such damaged channels (The 2000/01 project involves specialists in fluvial geomorpholgy as well as hydraulic engineering.)

- MELP Durability of Instream Structures $25K

III. Advancing Technical Capacity/Knowledge/Training/Communications

1. Methodology workshop development and delivery for channel assessment and rehabilitation. One area where integration and cooperation is paramount is in gully and channel assessments. Recent feedback from an independent coastal study indicated that logged-over gullies and channels were primary sources of sediment transport versus old road systems at Chapman Creek (Brian Carson, pers. com 1998), and thus a case example of note. Observations of lower order channels on hillslopes in the central interior also suggested the need for revision of the Channel Condition and Prescription Assessment (CCPA) course to incorporate assessments sediment sources, and well-integrated with gully assessment procedures in use on the hillslope component.

- MELP CCPA Methodology Workshop Development and Delivery $15K

2 Workshop Delivery of Riparian Assessment and Prescriptions Procedures. Procedures, particularly prescriptions, will be streamlined to assure cost-effectiveness, after the situation analysis is completed in 1999, thereby ensuring its application. Further refinement of course curriculum will be need in 2000/01 and course deliveries (shared course) undertaken; logged riparian zones are a joint responsibility in WRP.

- MELP RAPP Methodology Workshop Development and Delivery $15K

3 MOF has two annual Watershed Restoration Conferences with adjacent Short Courses (interior and coastal). These will be integrated as far as is feasible. One to two aquatic projects have been independently featured.

- MOF Watershed Restoration Conferences and Short Courses $50K

4 The Technical Review and Evaluation Working Group (TREWG) committee (MOF & MELP) may meet several times a year to discuss and decide on the direction of various aspects of WRP. This

Funding is based on TREWG committee member's travel, accommodation and meeting expenses for four meetings/year.

- MOF TREWG Meeting and Travel Support $10K

To facilitate watershed restoration information acquisition and exchange, it is desireable for WRP Coordinators meet within BC and with the U S Forest Service. This funding is for Meeting and Travel expenses, based on two meetings/year for six coordinators. The MELP-led Canada-US exchange will seek further MOF involvement, to the extent MELP can obtain agreement by our US partners. In the year 2000/01 focus will be on a US conference and instructional tours of US Forest Service restoration projects

- MOF Technical Information Meetings $25K
- MELP US Canada Technical Exchange $25K

5 Watershed Restoration Technical Bulletin is currently a joint venture (since 1997) that is popular and well rated by practitioners at all levels, although MOF has had some difficulty providing sufficient features and hence it may not be as well-rated by hillslope readers. It was agreed that the past issues of the FERIC-led compendium would become a primary source of MOF features as selected by MOF (pending). The Streamline cover has been modified to depict riparian reserve zone restored to a desired future riparian condition, and the primary name heading changed to Watershed Restoration Bulletin. Additional MOF support (+$25k) will provide for an assistant editor.

- MELP Watershed Restoration Technical Bulletin $50K
- MOF Watershed Restoration Technical Bulletin $50K

6 Aquatic restoration is a new and developing discipline and thus demonstration-training sites are vital for training, mentorship and instructional tours. Some of MELP's instructional sites are being examined by MOF to determine if similar uses can be used jointly for technical communications (brochures) and for demonstration of hillslope techniques such as slope bioengineering and road treatments. Attempts will be made to align undeveloped but planned training sites. Several have been developed with two aquatic sites requiring additional resources (Skeena and Kootenays regions)

- MELP WRP Demonstration-Training Site Development $50K

7 Introduction to Watershed Restoration for Forest Workers, a MELP-led watershed integrated short-course, continues as a MELP-MOF integrated course. The hillslopes instructor was approved in 1998/99 for content and instruction via Vancouver Forest Region (deliveries funded to date by New Forests Opportunities, forest companies, and others).

- MELP Introduction to Watershed Restoration for Forest Workers $5K

8 Technical Communications. A MELP-led project was initiated in 1999/00 to ensure adequate public awareness via technical communications ("healthy watersheds for healthy communities") of BC's Watershed Restoration Program funded by FRBC. Both agencies are represented in a joint working group (with in put from FRBC and MF) to ensure there is adequate awareness of the entire scope and accomplishments of the Program (as per strategic objectives above) and thus funding is required in support of these activities.

- MOF Public Communication / Information and Web Page $15K
- MELP Technical Communications ($30K) and Web Page ($5K) $35K

9 B.C. Technical Advisory Team. Aquatic restoration, rehabilitation and mitigation techniques are new and changing rapidly, and thus a BC team of specialists is vitally needed to ensure projects are advanced in approach and design to ensure structural durability and biological effectiveness as well as

cost effectiveness. Demonstration training sites in each MELP region are a primary target of the technical team using MELP Staff and BC Conservation contractors (fisheries restoration engineering), with two key regional sites remaining (Kootenays and Skeena).

- MELP B.C. Technical Advisory Team. $80K

10 Annual Aquatic Restoration Compendium. An annual compendium of all aquatic restoration projects (with brief detailed descriptions and instructive photos) is needed for multiple purposes including training, mentoring, technical communications, and most importantly for documentation of activities as outputs and measures of outputs (km and ha treated annually) by various regions. 2000/01 will be the second year of a complete compendium of aquatic projects and their "as built" outputs.

- MELP Annual Aquatic Restoration Compendium. $29K

11 Fish Habitat Rehabilitation Training. Training in fish habitat rehabilitation, particularly at an advanced level, is needed to ensure cost-effectiveness and performance. There are also benefits to the Program by reducing complexity of "standard agreements, if these advanced courses are mandatory..

- MELP Training- Fish Habitat Rehabilitation $15K

12 Fish Habitat Assessment Procedures - course delivery and refinements. Some refinements are required to the diagnostics of the procedure, based on completed procedural testing. This will be incorporated in the course materials for delivery in 2000/01, with revision of WRP Tech. Circ. 8 which this project will also support.

- MELP Course Delivery of the Fish Habitat Assessment Procedures $5K

13 Training Development and Materials. Materials are need for training courses and technical communications, with plans to focus on material for a new culvert-fish access assessment course that will be piloted under fish habitat rehabilitation (above).

- MELP Training Development and Materials $15K

14 Contracted support for providing liaison with instructors and educators/networks, for materials for training courses, and particularly for technical communications tools/toolboxes is required annually by MELP.

- MELP Training/Communications Liaison $30K

Total WRP HQ Investment Plan 2000/2001									FRBC Priorities for 1999/00 from Feb 24/99 Budget Meeting:
		2000/01	12%						**EM**: Effectiveness monitoring: framework implementation, ID gaps,
		Proposed	Proj Admn						training/workshops, data management, technical specifications
	Total WRP HQ Investment Pgm	**$599,300**	**$ 81,723**						**R**: Ripanan: tech. standards, assessmt. guidelines, training
	Percentage of 1998/99 ($958,836)	***63%***							**IP**: Integrated watershed planning
									TC: Build technical capacity: training courses and workshops,
									training development, Streamline, BC/US Advisory
		2000/01	12%				MELP's	FRBC's	
		Proposed	Proj Admn	**Total**	**Outputs**	**No. Outputs**	**Priority**	**Priority**	
	WRP Technical Support								
48052	Biophysical Database Design & Construction	$ 5,000	$ 682	$ 5,682	Report	1	High	EM	Provincial effectivness monitoring data base
48056	Field Testing Riparian Assessment Procedures	$ 15,000	$ 2,045	$ 17,045	Report	1	Medium	R	Operational trials for operational site guidelines for cost-effectiveness
48070	B.C. Technical Advisory Team	$ 80,000	$ 10,909	$ 90,909	Plans	20	V.High	TC	Ensures successful delivery of aquatic projects, advance key techniques
48009	USA - Canada Technical Exchange	$ 25,000	$ 3,409	$ 28,409	Report	1	High	TC	Ensures technology exchange: advisory input, annual conference,US sites
48072	WRP Publications	$ 30,000	$ 4,091	$ 34,091	Reports	6	High	TC	WRP manuals partially cost-recovered, funds WRP technical publications
48074	Slow Release Fertilizer Testing	$ 30,000	$ 4,091	$ 34,091	Report	1	High	TC	Rapid aquatic rebound technique, comercial product re-done - testing phase
NEW	Compendium	$ 29,000	$ 3,955	$ 32,955	Report	1	V. High	TC	Annual Compendium, essential for tracking/communicating accomplishments
NEW	Resource Management Plan Guide	$ 20,000	$ 2,727	$ 22,727	Report	1	High	IP	Ensures effective implementation of RMP
		$234,000	**$ 31,909**	**$265,909**					
	WRP Training and Technical Communication								
48015	Training Course: Channel Condition (CCPA)	$ 15,000	$ 2,045	$ 17,045	Courses	2	High	TC	Incorporation of channel sediment sources; develop as part of CCPA training
48058	Training/Communications Liaison	$ 30,000	$ 4,091	$ 34,091	Reports	10	High	All	Support for training delivery and technical communications materials
48096	Training Courses Fish Habitat Rehabilitation (FHRP)	$ 15,000	$ 2,045	$ 17,045	Modules	8	High	TC	In-house training in advanced stream restoration; may be mandatory
48016	Training Course: Riparian Assessment (RAPP)	$ 15,000	$ 2,045	$ 17,045	Courses	4	High	R	New techniques under development, contracted bio-forester deliveries
48017	Training Course: Fish Habitat Assessment (FHAP)	$ 5,000	$ 682	$ 5,682	Courses	2	Medium	TC	Refine manual by revising assessment diagnostics and revise course
48073	Streamline Technical Bulletin	$ 50,000	$ 6,818	$ 56,818	Reports	4	High	TC	Priority WRP adaptive management/innovations tranfer tool (2400 users)
48097	Demonstration/Training Site Development	$ 50,000	$ 6,818	$ 56,818	Sites	6	V.High	TC,R	Continued support for demo-training site development, 00/01 focus on Skeena
48076	Web Page	$ 5,000	$ 682	$ 5,682	Report	1	Medium	TC	Update/refine underutilized web page for technical communications
48077	Technical Communications	$ 30,000	$ 4,091	$ 34,091	Reports	4	V. High	All	Brochures, posters, display units to direct technical info to non-tech. audiences
48098	Training Development and Materials	$ 15,000	$ 2,045	$ 17,045	Modules	6	High	TC	Develop Culvert and EM courses, update other instructor, participant packages
48099	Training Courses: Forest Worker Training (FWT)	$ 5,000	$ 682	$ 5,682	Courses	4	High	IP	Maintain in-demand customized watershed-level courses and expertise
NEW	Performance Auditing	$ 15,000	$ 2,045	$ 17,045	Report	1	High	IP	Technical audit of WRP field project performance in Regions (with MOF)
		$250,000	**$ 34,091**	**$284,091**					
	Effectiveness Monitoring								
48051	Instream Structure Optimization	$ 60,000	$ 8,182	$ 68,182	Report	1	High	EM	Key watershed, 4th yr, only controlled coastal effect monitor. proj
48055	Durability of Instream Structures	$ 25,000	$ 3,409	$ 28,409	Report	1	Medium	TC,EM	Need for technique refinements, UBC Civil Eng. WRP Manag. Rpt 8
NEW	Off channel optimization	$ -	$ -	$ -	Report	1	Medium	EM	Refine WRP off-channel techniques: potential double of WRP wetland benefits
709796	Integrated Watershed Monitoring	$ 30,300	$ 4,132	$ 34,432	Report	1	High	EM, IP	Continue Effectivness Monitoring Framework: watershed-level case study
		$115,300	**$ 15,723**	**$131,023**					
		$599,300	**$ 81,723**	**$681,023**					

2000-01 WRP Headquarters Investment Plan

FRBC #	Special Projects	Acct	$ k	Priority	Description	Output
713244	**MEM** - Mining Tenure Holders Consultation	40530	30	High	When road deactivation is planned, the tenure holder must be contacted to assertain if the road is required. Funds are required for MEM to hire consultants to contact and consult with mining tenure holders prior to road deactivation.	
713246	WRP Project Registry Data **(MOF&MELP)**		done in 99		Data on completed WRP Projects is not readily available. Funds to collect data on completed WRP projects from regional and district offices and enter into a database that is readily accessible.	
713249	**Riparian** Restoration Situation Analysis **(MOF&MELP)**		done in 99		A situation analysis of Riparian Restoration was started in 1999 and is in progress. It is required to complete this analysis.	Report
new	**Riparian Restoration**		40		Follow up to the results of the Situation Analysis to a maximum of 40K$.	
new	WRP Planning, coordination and adminstration - Salary	40530	85	High	Stob 10, 20, 30 and adminisration funding for policy, planning and priority setting - to manage the WRP program	
FRBC #	**Effectiveness Monitoring**		**$ k**	**Priority**	**Description**	
new	Effectiveness Monitoring - **Technical Specifications** development **(MOF&MELP)**	40531	40	High	The Integrated Effectiveness Monitoring Framework is now developed. Now the technical specifications, for collecting and recording monitoring data in the field, need to be developed .	Specifications
new	Effectiveness Monitoring - **Field test** the Technical Specifications. **(MOF&MELP)**	40531	40	High	To demonstrate the monitoring technical specifications, it is planned to do one interior pilot monitoring project at a cost of up to 30K. One pilot has already been done on Vancouver Island and this pilot is to be an integrated MOF-MELP project.	Test Report
new	Effectiveness Monitoring Data and **Adaptive Management (MOF&MELP)**	40531	25	Med	When Effectiveness monitoring data is collected, it is necessary to have the data collected, accessible and a feedback system for management (adaptive management system)	Report
new	Effectiveness Monitoring **Training** Course	40531	25	Low	Effectiveness Monitoring framework is completed and technical specifications are to be developed. Once these documents are developed, they will be reviewed to determine the training needs for 1999-00. Funds will be reallocated if necessary.	Course curriculum

2000-01 WRP Headquarters Investment Plan

FRBC #	Build Technical Knowledge	Acct	$ K	Priority	Descriptions	Out;ut
713248	**WRP Guidebook** - TC # 3 Revision	40532	done in 99	High	Technical Circular No 3 was written in 1994 and is now out dated by knowledge and experience learned over the past 4 years. These are funds for revision of TC # 3 to a guidebook / handbook of watershed restoration including the new goals of WRP.	Guide book
713251	Watershed Restoration **Conferences and Short Courses. (MOF&MELP)**	40532	50	High	Since WRP is an evolving program, information exchange and training are essential until the techniques are established. Information exchange is accomplished by 2 Watershed Restoration Conferences (Coastal and Interior) with adjacent short courses on current topics of common interest.	Two confer ences
713245	Technical Review and Evaluation Working Group (**TREWG**) Meeting and Travel Support	40532	10	High	The TREWG committee (MOF & MELP) may meet several times a year to discuss and decide on the direction of various aspects of WRP. This Funding is based on TREWG committee member's travel, accommodation and meeting expenses for four meetings/year.	
713254	Technical Information Meeting (Meeting and **Travel** Expenses)	40532	25	High	To facilitate watershed restoration information acquisition and exchange, it is desireable for WRP Coordinators meet within B C and with the U S Forest Service. This funding is based on two meetings/year for six coordinators.	
713253	**Watershed Restoration Bulletin** - 'Streamlines' **(MOF&MELP)**	40532	50	Med	Watershed Restoration Bulletin (formerly Streamline) published jointly by MOF and MELP. Funds to contribute to the cost fo a part time **editor** and publication and distribution costs.	Bulletin
new	Public Communications		15		This project was initiated in 1999/00 to ensure adequate public awareness of BC's Watershed Restoration Program. Both ministries are working to ensure there is adequate awareness of the entire scope and accomplishments of the Program.	Com pendium
	Total of all priorities		**435**			